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Social Policy in Economic Development:
The Case of Health and Old Age Insurance

by

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CONTENTS

ABSTRACT

This paper analyzes possible justifications for government interventions in health and old age insurance and illustrates the theoretical considerations by the case of Chile where a comprehensive social sector reform took place in the 1980s. It is shown that health insurances can suffer from adverse selection and risk selection as well as from moral hazard. In dealing with adverse selection and risk selection, governments can choose between social insurance and regulated private insurance, depending on the relative weight given to equity and efficiency. The problem of moral hazard can be diminished by various supply and demand side cost-sharing devices. With respect to old age security, the case for the system of forced savings prevailing worldwide mainly relies on the hypothesis that people tend to undersave for retirement. Among the possible pension schemes, funded systems are likely to have advantages over PAYG systems in that they improve efficiency.

JEL-Classification: G22, H55, I18

I. INTRODUCTION

There is now a widespread consensus – at least among economists – that governments in developing countries (DCs) should adopt a market-oriented approach to foster economic development. It is much less evident which role social policy has to play in such an approach. Broadly defined, including education, health care, old age security, unemployment benefits, and various social allowances, social policy can serve three basic objectives (Barr 1993):

(i) poverty alleviation and the reduction of inequality;

(ii) human capital formation;

(iii) economic security.

The first objective, with its emphasis on equity, is likely to come into conflict with economic growth because redistribution on a significant scale requires high taxation and distorts incentives, but there also may be some positive links between equality and growth as a number of recent papers has shown (e.g. Alesina and Perotti 1996, Perotti 1996; Persson and Tabellini 1994). In the field of human capital formation, the main task of governments is to complement the market, e.g. by subsidizing basic education where externalities prevail. With respect to economic security, which includes insurance against risks like illness and unemployment and the smoothing of

income through savings for old age consumption, it is least obvious why and, if yes, how the state should intervene. The present paper, therefore, focuses on this third objective of social policy. Since unemployment insurance is largely limited to OECD countries (World Bank 1995) the discussion will be limited to health insurance (Chapter II) and old age security (Chapter III). For both insurances, efficiency and equity arguments for state involvement will be analyzed in order to assess the different possible policy options. The analysis will be illustrated by the case of Chile where a comprehensive social sector reform took place during the 1980s. Chile's reforms are largely in line with theoretical reasoning and may thus provide valuable insights for other potential reformers.

II. HEALTH INSURANCE

Health expenditures tend to increase in the course of economic development (Table 1). In low and lower-middle-income countries health spending on average absorbs about 4 percent of GDP. This share rises to 6–9 percent in most OECD countries. Prominent outliers are the United States where almost 13 percent of GDP are spent for health care, and Singapore with a far below-average share of 2 percent (Musgrove 1996). Interestingly, private health expenditures as a percentage of GDP are roughly constant across

income levels whereas public expenditures increase. Rising demand for health care is thus largely met by the public sector.

Table 1 —Health Expenditures By Income Groups (percent of GDP), 1990[a]

Income groups	Total health expenditures	Public expenditures	Private expenditures
Low	4.1	2.2	1.9
Lower-middle	3.9	2.1	1.8
Upper-middle	5.2	3.1	2.1
High	7.5	5.5	2.0

[a] Unweighted country averages.

Source: Own calculations based on World Bank (1993) and Musgrove (1996).

The bulk of health expenditures, usually over 90 percent, is devoted to clinical services (ibid.). Many of these clinical interventions are too costly to be paid out-of-pocket. The consequence is that risk averse individuals have an incentive to pool their risks in insurances. As Table 2 indicates, the demand for insurance tends to be income-elastic. In low-income countries, only small minorities of the population are covered by insurance arrangements, e.g. less than 10 percent in most of Sub-Saharan Africa (Shaw and Griffin 1995). Out-of-pocket payments still account for more than half of total health spending. In the middle-income countries, there are broadly two types of health systems, distinguished by whether the government or the

private sector provides insurance. Where insurance is private, it is usually limited to upper income groups, while in countries with social insurance middle-class workers tend to be covered as well. In the industrialized economies, with the prominent exception of the United States, universal or near-universal coverage has been achieved, financed partly through general tax revenues and partly through social insurance.

1. The Rationale for Government Intervention

Insurance against health risks raises two difficulties which both have their origin in an asymmetric distribution of information between consumers and insurers: *adverse selection* and *moral hazard*. Adverse selection arises when insurers cannot distinguish high- from low-risk individuals. With perfect information, insurers would charge different premiums depending on individual riskiness and thereby ensure a pareto optimal outcome. Where the insurance company cannot observe individual risks, it must charge a premium based on average risk. Facing such a contract, low-risk individuals would drop out. In the next round, insurers would have to increase premiums in order to avoid losses resulting from the deteriorating average risk profile of their customers which would again lead to a drop-out of those with relatively low risks.

Table 2 —Clinical health systems by income group[a]

Country group	Main characteristics	Examples
Low-income	– High private out-of-pocket spending for traditional medicine and for drugs – Public services financed from general revenue – Little Insurance (usually less than 10 percent of population)	Bangladesh, Pakistan, India, most of Sub-Saharan Africa
Middle-income		
a) Private insurance	– Government services for low- and middle-income groups financed from general revenue – Private voluntary insurance and private provision for high-income groups (less than 20 percent of population)	South Africa, Zimbabwe
b) Social insurance	– Public health and clinical services for low-income groups financed from general revenues – Social Insurance for wage labor force, with mixed provision (coverage varies; nearly universal in Costa Rica and Korea)	Republic of Korea, Turkey, most of Latin America
Established market economies	– Universal or near-universal coverage through general revenue financing or compulsory social insurance – Use of capped third-party payments and global budgets	France, Germany, Japan (social insurance), Sweden, UK, Norway (general tax revenues)
United States	– Voluntary private employment-based insurance – Use of general tax revenues for Medicare and Medicaid – Unregulated and open-ended fee-for-service compensation – High administrative costs associated with health provision and insurance	United States

[a]The systems of former socialist economies are not included.

Source: Adapted from World Bank (1993).

This process would end up in a breakdown of the insurance market (Spence 1978). But it seems realistic to expect a market response to the problem of adverse selection. First, insurers can offer separate contracts, e.g. one with full insurance and one with partial insurance, which face potential customers with incentives to reveal their true risk status (self selection). In such a setting, there exists a market equilibrium between the two polar cases of perfect information and complete adverse selection. This can be illustrated by means of Figure 1. With perfect information, (C_H, C_L) represents the pareto-efficient full insurance equilibrium which separates high from low risks.[1] If information is imperfect, the pooling equilibrium A is not stable because low risks have an incentive to opt out. With differentiated contracts, however, a separating equilibrium (C_H, C_L) can be established where high risks are indifferent between full and partial insurance and thus have no longer an incentive to conceal their true risk. This equilibrium is necessarily pareto inferior to the benchmark of perfect information because high-risk individuals whose risk status cannot be observed directly and who therefore benefit from an information advantage will only be ready to reveal their true

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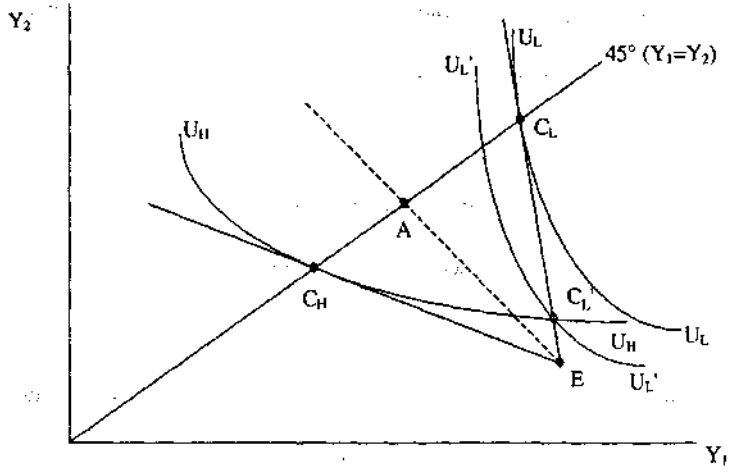
[1] Under perfect information, risk averse individuals choose full insurance unless there are significant administrative costs which drive up premiums above the acturarial level (Barr 1993).

risk status if they are subsidized by low risk individuals. The result is that the latter are worse off than under perfect information, paying higher premiums while choosing only partial insurance, i.e. a less than efficient amount of coverage (ibid.). Second, insurers have the possibility to collect information, e.g. via obligatory medical checks, in order to identify the risk status of their customers (risk selection). This implies a move towards the perfect information equilibrium (C_H, C_L). Since risk selection causes additional administrative costs for the insurer it will, however, always lead to higher premiums than in a situation with perfect information.

The better insurers are able to distinguish high from low risks, the more the efficiency problem of adverse selection turns into an equity problem of risk selection where price discrimination prevails, preventing poorer people with significant health risks from buying insurance and possibly leading to a screening-out of high-risk groups (such as the aged) or certain conditions (such as chronical illnesses). Such kind of selection bias is, for example, regarded as an important reason for the incomplete insurance coverage in the United States, where 37 million people, or about 15 percent of the population, are uninsured (World Bank 1993).

Figure 1 — Market Equilibrium with Adverse Selection



Symbols:

Y_1	income when working (minus contributions in case of insurance)
Y_2	income when sick
E	equilibrium in the no-insurance case for both low- and high-risk individuals
45°-line	locus of *full* insurance contracts
C_HE, C_LE	zero-profit lines of the insurance company for high- and low-risk individuals respectively
AE	zero-profit line when risks have to be pooled because they cannot be distinguished
U_L, U_H	indifference curves which are flatter for high-risk individuals because they accept a reduction in insurance coverage only in exchange for large reductions in contributions

The state has two basic options to deal with adverse selection and risk selection. The system employed in most OECD countries and a number of middle-income countries (e.g. Brazil, Turkey and Costa Rica) is a *mandated social insurance* with more or less uniform premiums independent of risk status which fully eliminates adverse selection and price discrimination. The same is true for arrangements like in Sweden, Norway and the United Kingdom where health care is financed out of general taxes. The only marked difference between social insurance and tax finance is that payroll contributions are usually proportional while direct taxes, at least in high-income countries, are progressive. The main disadvantage of social health insurance and tax finance is that it implies a large redistribution from low- to high-risk individuals. As a consequence, the former regard a substantial part of their contributions as true income taxes which may adversely affect their incentive to participate in the formal labor market.

A less intrusive second option is to *regulate private insurance*. Regulation would include compulsory membership and minimum standards of coverage in order to prevent good risks from opting out and free-riders from remaining underinsured because they hope to be bailed out by the state in case of a costly illness. Then the problem of non-insurable risks and the poor remains to be solved. Regulation could forbid insurance companies to withhold cover

from high-risk individuals and limit the extent of price discrimination. The extent of risk selection could be further reduced by prohibiting insurers from rating individuals' health risk and requiring them to rate only groups in which high risks are spread over a larger number of people. Alternatively, the state could let the private insurance market work freely and support high risks and the poor directly, by subsidizing insurance premiums, or by paying the cost of treatment through a residual public insurance scheme or out of tax revenues.

In assessing the private and social insurance options, the efficiency advantages of the former, namely the closer relationship between premiums and expected health expenditures and the competition between insurers, have to be weighed against the equity losses in terms of higher risk selection. The government thus has to deal with an efficiency-equity trade off. How strongly the two options differ depends on the relative weight of adverse selection and risk selection. If insurers are perfectly able to distinguish between risks the efficiency advantages of private insurance are largest, but at the expense of strong price discrimination. If, on the other hand, adverse selection dominates both options are inefficient in that low risks subsidize high risks because the latter enjoy an information advantage.

The second problem of health insurance, moral hazard, concerns both publicly and privately managed systems. It can arise in two different ways. First, insured individuals have an incentive to increase the probability of requiring medical care by taking fewer precautions because they do not pay the full cost of treatment. Such behavior which leads to overconsumption of health care forces insurers to raise premiums. As a consequence, good risks may opt out just like in the case of adverse selection. Second, there is the so-called third-party payment problem which has two sources: the fact that the insurance company has no influence on the decisions of doctor and patient, and the fact that the doctor is paid a fee for each service delivered, a common practice in many countries (Barr 1993). If medical insurance covers all costs, health care is "free" to the patient and the supplier is not constrained by the patient's ability to pay. Patient and doctor both face zero private costs of health care and thus have an incentive to consume all health care which yields any private benefit. Again, the result is overconsumption. This tendency is likely to be reinforced because of asymmetric information between doctor and patient. Patients may accept treatments they would not buy if fully informed, but which are advantageous to medical professionals (Musgrove 1996).

2. Cost Containment

Beside the possible insurance market failure due to asymmetric information, excessive costs have become a further problem of the health sector in a number of OECD countries and some middle-income countries. Four main reasons are mentioned in the literature (see e.g. Musgrove 1996) why health care costs may exceed their optimal levels. First, overconsumption resulting from moral hazard obviously drives up costs. Of particular importance in this respect is the third-party-payment problem which does not only lead to higher than optimal costs in each single period but also to growing expenditures overtime. This is due to the fact that if insurers rely on open-ended fee-for-service compensation of providers, i.e. if providers face no budget constraint, there is an incentive to make excessive use of new equipment, drugs and procedures. Korea and the United States are examples where open ended fee-for-service systems correspond with exploding health expenditures. In Korea, the share of GNP devoted to health rose from 3.7 percent in 1980 to 6.6 percent in 1990, in the United States it rose from 9.4 to 12.7 percent (World Bank 1993).

Devices to contain costs arising from moral hazard can affect the demand side and, in case of the third-party-payment problem, also the supply side of

the health system (Ellis and McGuire 1993). On the demand side, the insurer can limit coverage for the individual through deductibles (where the insured pays the first X $ of any claim) and copayments (where the insured person pays X percent of any claim). Both devices reduce the demand for treatment, but they are not fully effective in containing cost. Deductibles are a means to exclude small claims which usually have a high administrative cost component, but they do nothing to face individuals with marginal cost of more expensive treatment; and with a copayment rate of, say, 20 percent the patient's private marginal cost is still only 20 percent of the marginal social cost.

On the supply side, one way of reducing the third-party-payment problem are arrangements under which providers also act as insurers and assume the risk. This controls cost by forcing doctors to face the social marginal cost of the treatment they prescribe. The most outstanding example of this approach are the health maintenance organizations in the United States (Barr 1993). These organizations consist of a group of doctors who receive contributions from their patients and in return provide primary care themselves and buy in and monitor hospital care as necessary. Any surplus can be distributed to the doctors as additional income or to the members in the form of lower contributions or used to improve the service of the organization. Evidence

(e.g. Manning et al. 1984) suggests that health maintenance organizations have reduced medical costs by between 10 and 40 percent in comparison with fee-for-service medicine.

The main disadvantage of health maintenance organizations is that doctors have a strong incentive to accept only good risks or to underservice patients because they are paid according to a capitated system, receiving a fixed amount of money for each patient (Table 3). Similar problems arise when doctors receive fixed salaries. Under both payment mechanisms, cost containment is achieved at the expense of medical supply. Rewarding providers according to the diagnosis of their patients represents a payment method that tries to balance the objectives of cost control and positive supply incentives.

A second cause of excessive costs in the health sector which is undisputed in the literature is the subsidization of insurance. Subsidies are widespread and large in both private and public insurance schemes. They take the form of both direct budgetary transfers to insurance institutions and tax concessions for employers' and employees' insurance contributions (Musgrove 1996). In addition to driving up costs, in middle-income

countries where insurance coverage is mostly limited to the formal labor force such subsidies benefit the better-off and are therefore regressive.

Table 3 — Alternative methods of paying health providers

Payment method	Strengths	Weaknesses	Examples
Fee for service	Provider's reward closely linked to level of effort and output	Tends to cause cost inflation	USA, Republic of Korea
	Allows for easy analysis of providers practice	Creates incentives for excessive and unnecessary treatment	
Per case (for example, using diagnostic-related groups)	Provider's reward fairly well tied to output	Technical difficulty of forcing all cases into standard list can lead to mismatch between output and reward	Brazil, USA (Medicare); Chile (Planned for clinical services)
		Providers may misrepresent diagnosis in order to receive higher payment	
Capitation (per patient under continuous care)	Administratively simple; no need to break down physician's work into procedures or cases	Gives provider incentive to select patients based on risk and to reject high-cost patients or to underservice accepted patients	United Kingdom; USA (Health maintenance organizations); Chile (Planned for primary health care)
Salary (straight payment per period of work)	Administratively simplest	Can easily create incentives for provider to underservice patient and to reduce productivity	Sweden

Source: Adapted from World Bank (1993).

Third, high administrative costs resulting from large numbers of insurers reimbursing providers at different rates are often regarded as a further reason for inefficiently high health spending (see e.g. World Bank 1993). The United States and Korea are again cases in point. There, administrative costs absorb more than 10 percent of health expenditures, compared with 5 percent or less in other OECD countries (ibid.). Administrative costs are, however, not necessarily true deadweight losses, because choice in health insurance may be desirable for consumers with heterogeneous tastes even if this generates additional costs (Besley and Gouveia 1994).

Finally, competition between providers could be an additional option to avoid cost escalation and to increase efficiency in the health sector (Lal 1994). However, as long as consumers do not bear at least part of the costs of health care and as long as they are largely unable to judge the quality of specific health services, there will be no competition in prices or quality. Then, providers could try to attract patients by the amount of services offered which would lead to additional cost increases. Competition will thus only have the intended effects if there is some cost sharing and if consumers are sufficiently informed about health care. A reduction of the information asymmetry between providers and consumers can partly be achieved privately, e.g. by reading health magazines. But there is also a role for the

government in regulating the quality of health care, e.g. by requiring minimum qualifications for doctors or by approving new drugs.

3. The Case of Chile

The Chilean government's reforms of the health-care system, which started in 1975, had two main objectives: to improve the targeting of primary health services and food supplements to the needy and to increase the efficiency of the system itself (Castañeda 1992).[2]

As a central measure to make the health system more efficient the establishment of private insurance funds was encouraged, to which members of the existing social insurance scheme can shift their payroll deductions. The growth of private insurance funds has been substantial. Ten years after their start in 1981, they covered about 20 percent of the population.[3] The success of the private insurance funds has not only promoted competition at the insurance level, but it has also caused new private health providers to emerge. These private providers do not exclusively serve the privately

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[2] The first objective will not be discussed here.

[3] Adding the 65 percent of the population who are still members of the national insurance and the 5 percent participating in an insurance run by the military, aggregate coverage is around 90 percent, a very high figure for a middle-income country.

insured. Publicly insured people also have the option of consuming private health care if they are ready to pay varying levels of copayments. About 10 to 15 percent of the population make regularly use of this option (Márquez 1995).

Two major weaknesses of the reforms have endangered their overall success (Márquez 1995). First, private insurance funds have undertaken a very strict risk selection, denying coverage for certain medical services and for pre-existing conditions and providing almost no access for the elderly. As a result, the risk profile of the public insurance has gradually been worsened. This has created equity problems because private patients receive much better treatment than patients in the public system. Second, measures to contain costs have been insufficient. Cost sharing has been limited to the demand side, while health-care providers have been paid on a fee-for-service basis. Heavy subsidization of private and public insurance through tax deductions and direct government transfers has reinforced the pressure on health-care costs. As a result, public health expenditures slightly increased from 2.2 to 2.6 percent of GDP between 1980 and 1993, despite the growing importance of the private sector.

Government initiatives to deal with these problems have recently come underway (ibid.). In the early 1990s, legislation was enacted to strengthen regulation over the private insurance funds. Among other things, this legislation prohibits the unilateral termination of contracts and obliges the insurance funds to offer certain preventive services such as well child care. Further regulations are currently planned, e.g. to restrict exclusions permitted for certain services, to prescribe the formation of risk groups instead of individual risk-rating, and to regulate the coverage of pre-existing conditions. With these corrections, larger parts of the population would gain access to private insurance, possibly leaving only a residual role for the public system. Cost containment is to be improved by replacing the fee-for-service resource allocation mechanisms with fixed diagnostic-related payments for hospitals and a capitated system for primary health care facilities.[4] It is also considered to eliminate the existing tax concessions for employers' contributions to insurance.

In sum, if the planned refinements of the reforms are put into practice, Chile's health insurance will receive a stronger equity component. Nevertheless, by encouraging an increasing participation of the private

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[4] For the strengths and weaknesses of these payment mechanisms see Table 3.

sector and allowing for a significant degree of price discrimination, the Chilean government will still lay strong emphasis on efficiency compared to most other countries.

III. PENSIONS

It is a general phenomenon that people try to smooth consumption over lifetime by saving in their active period and dissaving during retirement, but the mechanisms for doing so differ in different parts of the world. More than half of the world's old people, the majority of them living in Africa and South Asia, rely on informal and traditional arrangements for income security based on the extended family or the community (World Bank 1994). When economic development proceeds, such features as increased urbanization and mobility tend to weaken these informal ties. Formal arrangements then appear as substitutes, mainly in the form of public pension schemes. As Table 4 shows, public pension coverage and public pension spending steeply increase with rising per capita income. In the upper-middle and high-income countries, pension spending has clearly overtaken public expenditures on health or education. Governments in high-income countries, for example, spend on average 5.5 percent of their GDP on health (Table 1), compared to 8.2 percent on pensions (Table 4).

Table 4 — Public pension coverage and spending (percent)[a]

Income groups	Contributors/ Labor force	Pension spending/GDP	Pension spending/Government expenditures
Low	10.2 (19)	0.7 (32)	3.9 (18)
Lower-middle	27.9 (16)	2.9 (29)	10.1 (16)
Upper-middle	50.7 (7)	6.7 (20)	23.8 (13)
High	95.8 (12)	8.2 (23)	23.1 (20)

[a]Unweighted country averages for years between 1985 and 1992. Numbers in parenthesis indicate number of countries for which data were available.

Source: World Bank (1994).

1. The Rationale for Government Intervention

While the erosion of informal old age security arrangements in the course of economic development can be expected, it remains to be explained why they usually have been replaced by public schemes and not by formal market arrangements. *Market failure* in the process of reallocating consumption over lifetime could be one reason. If individuals are risk averse, they have an incentive to insure against certain income risks which may appear in this process. The following income risks can be distinguished (Diamond 1977):

(i) the risk of a lower-than-expected real return on savings in the active period;

(ii) the risk of a lower-than-expected real return on the accumulated savings during retirement;

(iii) the risk of a shorter-than-expected duration of the active period, e.g. because of illness;

(iv) the risk of a longer-than-expected retirement.

All these risks imply that the wealth accumulated in the active period may not be sufficient to sustain the desired living standard during retirement. The first two kinds of problems are first of all a consequence of unexpected inflation (Barr 1993). Inflation risks are best kept under control by a sound monetary policy, possibly complemented by issuing indexed bonds. Remaining risks of variations in the real returns on savings in the active period can be lowered by diversifying the portfolio between different assets and countries. In order to avoid that large amounts of savings are wiped out, e.g. because pension funds go bankrupt, the government has the possibility to guarantee the deposits. This could, however, encourage moral hazard because riskier investments are chosen when the government is ready to compensate losses. A superior alternative would be to establish a reinsurance system to which pension funds pay contributions dependent on the volume and riskiness of their portfolio (Heinrich et al. 1996: 121). Since

higher risks are reflected in higher premiums, a reinsurance prevents distortions towards too risky investments.

The risks of longer-than-expected retirement and shorter-than-expected active periods require insurance. With voluntary insurance, moral hazard and adverse selection could lead to market imperfections. Obviously, this is not the case with respect to longevity. Moral hazard is not a problem as committing suicide is "costly" to the individual and, in addition, works in the insurance company's favor. Nor are there severe problems of adverse selection because people do not know when they are going to die. They might, of course, know that their life expectancy as, say, mining workers is lower than that of civil servants, but this does not create an information asymmetry as it is known by insurers as well. There is thus no reason why insurance companies should not offer annuities based on the average life expectancy of different occupational groups which would not only insure against longevity but also guarantee a smooth income stream during retirement. Markets for annuities have indeed evolved in countries like Chile (Vittas 1995) where pension funds play a major role.

Disability insurances that deal with the risk of a shorter-than-expected working life are more likely to suffer from information asymmetries, in

particular from moral hazard, i.e. from the tendency that individuals more frequently withdraw from the labor force than without insurance. This behavior can be limited by coinsurance arrangements and controls to check the state of health of the insured. If moral hazard is nonetheless so strong that a number of insured with lower risks opt out because of rising premiums, the government has – analogous to the case of health insurance – the choice between making private insurance compulsory or establishing a social disability insurance. The decision depends on whether it accepts a selection of risks, i.e. for example significantly higher premiums for mining workers than for civil servants.

Altogether, with the possible exception of disability insurance, market failure alone does not provide very compelling reasons for the large amounts of forced savings characterizing old age security systems in so many countries. The case for compulsory pension schemes is, however, strengthened by a *paternalistic* argument. According to this reasoning, many people don't save enough for their retirement, either because they behave opportunistically and hope for a bail-out by society, or because they are myopic and do not foresee the distant future (Kitterer and Seidl 1988). Such undersaving can be prevented by mandating a certain savings rate for old age security. A final explanation for government intervention in old age

security is *redistributive*. The state may wish to transfer income to those old-aged who were not able to save enough during their working life, which does, however, not necessarily require a system of forced savings (see below).

2. Pay-As-You-Go Versus Funded Schemes

If the government regards some forced savings for old-age security as necessary it has to decide whether the pension scheme should be organized as a funded system, i.e. with individual accounts for pension saving, or on a Pay-As-You-Go (PAYG) basis where current pensions are financed by current worker contributions. Funded systems are supposed to have three main advantages compared to PAYG systems which show up in higher economic growth (Corsetti and Schmidt-Hebbel 1995): more saving, higher formal-sector employment, and the development of capital markets. Proponents of PAYG systems regard as their main advantages that they allow for a redistributive component and exhibit substantially lower administrative costs than funded systems and that they do not depend on volatile capital markets (e.g. Barr 1993). Moreover, the authors point towards the inconclusive evidence in favor of positive growth effects of funded systems.

In assessing the impact of different pension schemes on savings, the life cycle model (Ando and Modigliani 1963) usually serves as a framework. Starting from a situation with no mandatory savings and assuming a distortion-free economy, the introduction of a funded system would simply have the result that people substitute pension contributions for their own saving, leaving net savings unaffected (Munnell 1985). In a PAYG system, generations which are retired or close to retirement at the time social security benefits are introduced, receive windfalls which induce them to consume more and save less (Kotlikoff 1996). For later generations of workers who enter the labor force after the introduction of the social security system, there will be little impact on lifetime resources and savings, provided that the system is actuarially fair, i.e. that payroll taxes in present value terms equal the benefits received in retirement. For a PAYG system to be actuarially fair, its "biological" return, i.e. the sum of the population growth rate and the growth rate of real wages, must be equal to the real interest rate (Aaron 1966). If this condition holds workers of later generations will reduce their private savings by the amount of their social security contributions, but subsequent benefits will also reduce the dissaving required to support retirement consumption, leaving lifetime savings constant. On balance, the life cycle model thus predicts that a PAYG system

lowers savings compared to a funded or a voluntary system, but that this effect is petering out when the system matures, i.e. when the windfalls of early generations disappear. In reality, the negative impact of a PAYG system on savings is likely to be somewhat dampened by the fact that "biological" returns tend to be lower than real interest rates so that later generations have an incentive to consume less and save more over lifetime.[5]

Extensions of the basic life cycle model lead to somewhat different results. There are at least three additional effects which may imply higher savings in both funded and PAYG systems. First, pensions may induce workers to retire earlier than they otherwise would (Feldstein 1974). This increases savings compared to the life cycle model with exogenous retirement age because people who retire early are forced to save at a higher rate over a shorter working life in order to finance a longer retirement. If income per capita rises, the amount saved by workers then exceeds the amount dissaved by retirees. Second, if people are myopic or if their preferences are such that they voluntarily save less than the pension scheme requires, private savings will not be reduced to the full extent of pension contributions. Third, pension

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[5] Kotlikoff (1996), for example, estimates that in the United States the "biological" return was only one third of the rate of return from investing in the market during the last 35 years.

rights are a very illiquid form of saving. Therefore, they will not fully substitute voluntary savings. A further extension of the life cycle model emphasizes altruistic behavior between generations (Barro 1974). Barro argues that if a PAYG social security system is introduced, there will be offsetting intrafamily transfers, e.g. reduced support for elderly parents. If altruism is complete, i.e. if Ricardian equivalence between social and intrafamily transfers holds, a social security system will have no impact on savings as it simply implies a rearrangement of transfers between generations.

Overall, the impact of pension schemes on savings is theoretically indeterminate. Most empirical studies detect a moderately positive effect of funded systems on savings (Munnell 1985). For PAYG-systems, the evidence is less conclusive. While recent studies by Feldstein (1996) for the United States and Edwards (1995) for a cross-section of 36 countries found a negative effect, a number of previous investigations provided no indication that public pensions have adversely affected private saving (Munnell 1985). Tests of Ricardian equivalence have shown that social security benefits only partly crowd out private transfers (Cox and Jimenez 1989; Altonji et al. 1992). Cox and Jimenez, for example, found that private transfers from

young to old in Peru would have been 20 percent higher without social security benefits.

The impact of PAYG and funded systems on labor supply would be equivalent if the PAYG system was actuarially fair. There are, however, two reasons why the return on PAYG contributions differs from the market real interest rate. First, as mentioned before, the "biological" return is typically lower than the real return on capital. Second, while the "biological" return determinates the average return on PAYG contributions, the return for each individual worker deviates from the average because PAYG pensions often include a component – unrelated to contributions – that redistributes income within cohorts. Hence, PAYG schemes are in general actuarially unfair from the point of view of individual workers. They contain a pure tax component, i.e. a part of the payroll tax which is not matched by expected future benefits, so that there is an incentive to reduce labor supply or to move into the informal sector. For Chile and Colombia, for example, the pure tax component before the introduction of funded systems has been estimated to be as high as 16 and 13 to 16 percent respectively (Schmidt-Hebbel 1995). In many DCs, the perceived link between premiums and benefits is further weakened by the fact that the future benefits are regarded as very uncertain, particularly because experience shows that benefits are often eroded by

inflation (World Bank 1994). Empirical studies, which have been limited to developed countries, provide weak evidence that existing PAYG systems have reduced labor supply (Danziger et al. 1981). This effect is likely to be stronger in DCs where the link between contributions and benefits tends to be weaker.

Positive growth effects of funded systems through the development of capital markets can in particular be expected in developing countries where financial deepening is still low. Until now, the hypothesis has not been tested empirically. There are only some theoretical considerations, e.g. that financial market development raises capital productivity (Roubini and Sala-i-Martin 1992), and the empirical observation that in Chile the introduction of a funded system was closely associated with an enormous growth of capital markets (see below).

Chile's experience may also serve proponents of PAYG systems as an example of how risky investment of pension contributions in capital markets can be. Just after the establishment of the funded system in 1981, a severe financial crisis endangered the existence of most pension funds. The state temporarily nationalized two of them in order to avoid huge losses for savers. The development after this crisis, by contrast, illustrates that pension

funds in DCs can perform sufficiently well to provide savers with secure investment opportunities. Tighter regulations of capital markets are usually mentioned as a main reason for the improved performance after the financial crisis (e.g. Queisser 1993), but it still remains to be systematically analyzed how a regulatory framework for pension fund investment should look like.

The other stated advantages of PAYG systems, namely lower transaction costs and the possibility of redistribution, are only at first sight very compelling. According to international cost comparisons administrative costs of public schemes lie between 2 and 3 percent of contributions, compared to a range of 10 to 30 percent in privately managed schemes (Kitterer and Seidl 1988). The cost differentials are, however, mainly due to expenses for acquisition and advertisement in competitive private markets. Whether these costs are matched by the possibility for consumers to choose between different offers is an unsettled question.

Redistribution is taking place on a large scale within PAYG systems, particularly in DCs. But as a comprehensive study of old age security in DCs shows (World Bank 1994), redistribution is in most cases extremely intransparent. This intransparency facilitates lobbying by higher-income

groups which often makes redistribution regressive.[6] Since the financing of income transfers out of contributions has the further disadvantage that it weakens the link between contributions and benefits, it is superior to support the old-age poor out of general taxes. Redistribution towards poor retirees can take the form of means-tested or flat benefits. Means-tested benefits redistribute to the poor more efficiently because they are targeted towards the needy, but they are administratively costly and impose high marginal tax rates on the recipient's savings and thus provide an incentive for poor people near the income threshold not to save at all. Flat benefits, by contrast, incur lower administrative costs and avoid perverse incentive effects, but they require higher tax rates as the group of recipients is larger. Whether means-tested or flat benefits should be employed depends on country characteristics, e.g. on the administrative capacity to conduct regular income tests.

If governments want to maintain some redistribution towards the old age poor, and if they finance it out of taxes there is no reason why it should not

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[6] Lobbying is not the only reason why public social security programs have adverse redistributional effects. Another important reason is that the first people to be covered when new plans are started are usually middle- and upper-income groups who typically receive large transfers (World Bank 1994).

be combined with an actuarially fair funded system for pensions above a minimum level. By disentangling the two objectives of old age security – insurance and income smoothing on the one hand and redistribution on the other hand – such a two pillar system would at least greatly enhance transparency and possibly also lead to a more progressive redistribution and higher growth. A two pillar system with well-targeted transfers can, of course, also be established on a PAYG basis so that the superiority of a funded pension scheme solely hinges on its expected growth effects. Independent of whether pensions are organized on a funded or PAYG basis, redistribution alone does not provide a justification for forced savings because support to the old-age poor could as well be integrated into the general tax and transfer system.

3. The Case of Chile

Chile was the first country that introduced a two pillar system in 1981. Recently, it was followed by Argentina, Colombia, Mexico and Peru. All these countries had to manage a transition from their old PAYG system. There are two basic ways to finance this transition. The first choice would be to transform the implicit PAYG debt into explicit debt. Financing the pension reform in this way does not change the government's net asset

position and hence does not shift income across different generations, leaving their wealth and saving levels unaltered (Schmidt-Hebbel 1995). Paying interest on the now explicit debt will, however, lay a slight burden on all future generations provided that the bonds have an infinite duration.[7] The second way of government financing is through fiscal contraction, i.e. by raising taxes or cutting government expenditures. This choice imposes an income loss on all transition generations that have to pay for higher taxes or that suffer from lower government spending, i.e. it implies a redistribution between generations. Chile implemented a combination of both strategies. Fiscal contraction, particularly in the form of lower government expenditures, was used to pay the current pensions guaranteed by the old system, while bonds were issued for those who had accumulated pension rights under the old system. To build up the new system, workers are required to put at least 10 percent of their salaries into one of several competing privately managed pension funds (Holzmann 1996).

An assessment of Chile's pension reform appears to be difficult because it was only part of a much larger restructuring. Most clear-cut are the

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[7] Bonds with an infinite duration minimize the welfare losses by dividing the burden of transition equally between all future generations.

redistributional effects. In the old system, a high degree of discrimination existed between the numerous pension institutions, mainly at the expense of poorer blue-collar workers and in favor of (rich and poor) public employees (Castañeda 1992). Under the new system, transfers are well targeted to those who were not able to save enough during their working life. These old age poor receive a minimum pension, the difference between accumulated savings and pension benefits being financed out of taxes. The minimum pension guarantee is a variant of a means-tested benefit, but it eliminates transaction costs because it is automatic and based on records maintained by the mandatory saving scheme, and it minimizes negative effects on savings. Since the Chilean pension scheme covers more than 85 percent of the employed, the minimum pension guarantee reaches most of the old age poor. The only major exception are the low-income self-employed, who can participate voluntarily in the pension system but rarely do so (Queisser 1993). The self-employed poor are entitled to a means-tested social allowance which is, however, substantially lower than the minimum pension guarantee.

It is also likely that Chile's pension reforms have improved the efficiency of labor and capital markets. The pure tax component of pension contributions has been reduced from 16 percent in 1980 to 2 percent in 1992 (Corsetti and

Schmidt-Hebbel 1995). Even at modest labor supply elasticities this would imply a gain in formal employment. Capital markets have grown enormously, particularly since 1985 when pension funds were allowed to invest in equities for the first time. Between 1984 and 1993, stock market capitalization sharply rose from 11 to 102 percent of GDP (Vittas 1995). The pension funds have played an instrumental role in the privatization of several utilities and in developing the market for mortgage and corporate bonds. For some financial instruments, their quantitative impact is very large. In 1994, pension funds represented, for example, 62 percent of all mortgage bonds. The good performance of the Chilean pension funds is also reflected in high real returns on investment (Table 5). Similarly high returns were only earned by other privately managed pension funds in some OECD countries. The state-owned provident funds in Singapore and Malaysia, which are required to invest in government securities and face no competition, earned significantly lower returns. In countries like Zambia and Peru publicly managed pension schemes even wiped out large parts of people's savings, because accumulated funds were not indexed to inflation. These examples indicate that macroeconomic stability is an important precondition for funded schemes to work properly.

Table 5 —Average Annual Investment Returns for Selected Pension Funds, 1980s

	Country	Real return
Privately managed	Chile	9.2
	UK	8.8
	USA	8.0
	Netherlands	6.7
Publicly managed	Malaysia	4.6
	Singapore	3.0
	India	0.3
	Kenya	-3.8
	Ecuador	-10.0
	Egypt	-11.7
	Venezuela	-15.3
	Zambia	-23.4
	Turkey	-23.8
	Peru	-37.4

Source: World Bank (1994).

Chile's pension funds would probably even fare better, if their investments were not heavily regulated by the state. Pension funds are, for example, not allowed to invest more than 30 percent of their assets in equities (Vittas 1995). One reason for these regulations is that the state guarantees a minimum return to the pension contributions of workers and thus wants to prevent pension funds from undertaking too many risky investments. As mentioned above, a reinsurance scheme possibly is a more adequate regulatory framework because it does not distort investment decisions. It does, however, only prevent large losses for savers while variations in real

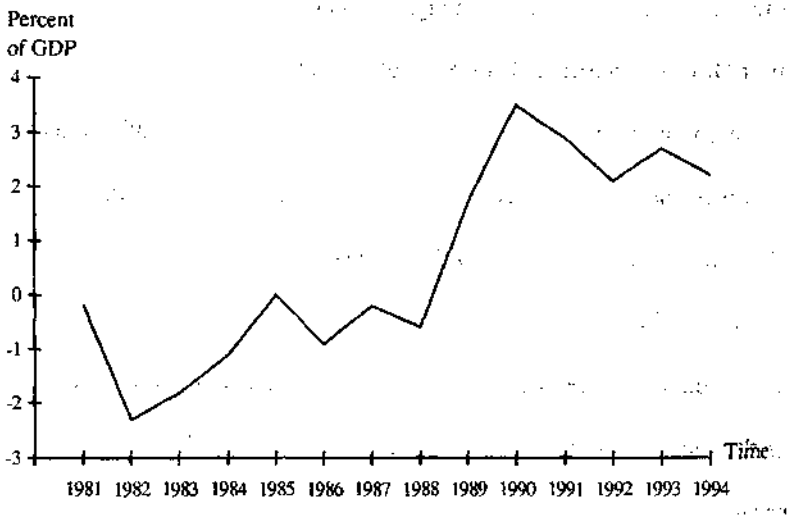
returns on savings are not restricted so that the individual faces higher investment risks. The open question is how much risk savers are ready to accept as a "price" for higher average returns in a funded system.

The existing regulation of investments also appears to be one factor behind the high administrative cost of Chile's pension funds, which lie between 15 and 30 percent of contributions (ibid.). Since the pension funds have rather similar portfolios there is no strong price competition and, as a consequence, large amounts are paid on advertisement in order to gain new customers.

The reform's impact on savings is the most difficult one to assess. Holzmann (1996) argues that the direct impact of the pension funds on domestic savings was negative between 1981 and 1988 and positive thereafter (Figure 2). He obtains these results by adding up the money flowing into the individual pension accounts and subtracting the transitional losses of savings due to the reform, i.e. the public spending necessary to provide pensions to persons who retired under the old system and the cost of compensating workers who already paid contributions into the old system. The figures do not account for the fact that Chile financed part of the transition costs by cutting public expenditures which increased the budget surplus and thus fuelled public savings.

In sum, the existing evidence suggests that Chile has benefited from the transition to a funded system, both in equity and efficiency terms, although it remains to be seen whether the high returns on savings can be sustained in the future. A more rigorous assessment of the reform's welfare implications can only be achieved in a modelling framework, e.g. by means of simulations in an overlapping generations model.

Figure 2 - Contribution of Pension Reform to Chile's Domestic Savings



Source: Holzmann (1996).

IV. SUMMARY AND OPEN QUESTIONS

This paper analyzed the justification for government interventions in health and old age insurance and compared the theoretical considerations with actual performance, in particular with the situation in Chile after the social sector reforms in the 1980s. It was shown that health insurances tend to suffer from adverse selection and risk selection as well as from moral hazard. In dealing with adverse selection and risk selection, governments have to choose between two basic options, thereby facing an equity-efficiency trade-off. If they put a high weight on equity in health care, like in most OECD countries and some middle-income countries, social insurance where premiums do not vary according to health risks is usually preferred. However, such an arrangement is bought at efficiency costs in terms of work disincentives for low-risk individuals. Where efficiency receives a higher weight, e.g. in Chile or the United States, regulated private insurance which leaves room for price discrimination between high and low risks is regarded as the superior alternative. The second problem of health insurance, moral hazard, arises in both private and public schemes. It can be reduced, but not eliminated, by means of various supply and demand side cost-sharing mechanisms.

With respect to old age security, insurance market failures do not provide a strong rationale for the system of forced savings prevailing worldwide. The same is true for redistributional objectives which could as well be achieved through the general tax and transfer system. The case for forced savings mainly relies on the hypothesis that people tend to undersave for retirement. If one comes to the conclusion that forced savings are necessary, funded systems seem to have advantages over PAYG systems in that they improve efficiency as the case of Chile illustrates. There may, however, be a second-best argument in favor of PAYG pensions where severe capital market failures exist which for some reason cannot be corrected.

A more clear-cut assessment of the different policy options requires answers to some yet unresolved questions. First, the intensity of the equity-efficiency trade-off in health insurance depends on the (unknown) relative weights of adverse selection and risk selection. As long as adverse selection dominates, price discrimination is limited by the existing information asymmetry so that the difference between private and public insurance is only small. Possible efficiency gains of private insurance rise with the importance of risk selection. Second, it is important to obtain evidence on the extent of undersaving because it is a main determinant of the relative merits of voluntary and forced savings for retirement. Third, when arguing in favor of

individual saving accounts for old age security, it has yet to be demonstrated that under certain sets of regulations pension funds perform sufficiently well to provide risk averse savers with reasonable investment opportunities. Finally, the decision to reform existing pension schemes depends on the welfare effects of the transition from a PAYG to a funded system. Numerical welfare calculations which could support this decision are until now limited to a few OECD countries. Similar studies for middle-income countries would possibly provide new valuable insights.

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